The Newsletter of the National Weather Service in Green Bay, Wisconsin

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Packerland Weather News

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Inside this issue:

Tornadoes Hit Central and East-Central Wisconsin

Jeff Last, Warning Coordination Meteorologist, NWS Green Bay

Just like the thermometer this summer, the 2003 severe weather season has been slow to heat up. Cooler than normal temperatures across much of northern and central Wisconsin have, for the most part, kept widespread severe storms from affecting the area. June 8 was a different story, however, as strong thunderstorms developed across central and east-central Wisconsin. Five weak tornadoes developed, four of them in the NWS Green Bay forecast area.

A tornado south of Marshfield (Wood county) did several thousand dollars in damage to a garage and play house. Two 50 pound metal barrels were thrown more than 200 yards. Three tornadoes affected Winnebago county and Lake Winnebago but did not produce damage.

The tornadoes (waterspouts) on Lake Winnebago were seen by many people. A fishing tournament was in progress on the southern part of the lake during the event. One person was quoted as seeing as many as five to seven funnels or waterspouts over the lake during the afternoon.

So what is the difference between a tornado and a waterspout? A waterspout is a tornado over water and is no less dangerous than a tornado on land. The difference lies not where the tornado forms, but with the type of thunderstorm that produces the twister. Some tornadoes form from large thunderstorms known as "supercells." These tornadoes are usually the more violent type, causing extensive or extreme damage. Other twisters form from ordinary thunderstorms, and when on land, are sometimes referred to as "landspouts." The tornadoes that formed on June 8 were from small thunderstorms and not the type that typically cause severe damage. Nonetheless, anything in their path could sustain some damage, as was experienced in Marshfield.

A picture of one of the waterspouts on Lake Winnebago. Picture by Nancy Gryzwa.

All tornadoes are dangerous. If the National Weather Service issues a Tornado Warning for your area, assume threatening weather is approaching and seek shelter.

How Are We Doing?

If you have any suggestions for articles or have comments about the ***Packerland Weather News***, feel free to contact us at:

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Weather Observers Receive Recognition

By Linda Karman, Administrative Support Assistant and Pat Hein, Hydrometeorological Technician, NWS Green Bay

Three cooperative weather observers recently received recognition for their service and dedication in reporting and sending daily climate reports to the National Weather Service office in Green Bay.

Stephen Hunt received a 15-year service award in February 2003 for his efforts in recording daily observations in the North Pelican Lake area. Hunt is a part-time dam tender with the Wisconsin Valley Improvement Company, and works full-time transporting and operating a mobile MRI center to various medical facilities.

Jim Heinemann and his wife Marge of Rhinelander received their 10-year service award in February of this year. Heinemann faithfully records and sends climate reports to the National Weather Service office every morning at 7:00 a.m., while his wife assists him in taking snow and precipitation measurements.

Keith Koster of New London received a 10-year service award in May 2003. The New London coop site is a part of the National Historic Station Network. While Koster has maintained the climate records since 1993, records are available dating back to 1895. Koster is an avid runner and works full-time for the Social Security Administration in Appleton.

The contribution of cooperative observers to the mission of the National Weather Service is vital. While coop observers come from all walks of life, they all share the same dedication to providing local climate reports to assist in the issuance of forecasts, watches, warnings, and advisories.

For more information on the volunteer weather observer program, visit the NWS Cooperative Observer web site at weather.gov/om/coop

Stephen Hunt (left) accepts a 15-year service award from NWS Green Bay's Pat Hein.

Marge and Jim Heinemann with their 10-year service award.

Keith Koster (right) accepts a 10-year award from Pat Hein.

City of Waupaca is StormReady

The city of Waupaca joined the StormReady communities of the U.S. during a brief ceremony on July 15, 2003. NWS Green Bay Warning Coordination Meteorologist Jeff Last presented city of Waupaca officials with a StormReady certificate and road signs during the monthly City Council meeting.

StormReady is a National Weather Service program that addresses the need for a higher level of community awareness in order to minimize the loss of life and property from extreme weather. StormReady communities are better prepared to save lives from the onslaught of severe weather through better planning, education, and awareness. No community is storm proof, but StormReady can help communities save lives. Waupaca is the sixth community in Wisconsin to earn the StormReady designation.

NWS Green Bay Holds Seminar for Partners

A Spring Customers and Partners Seminar presented by the Green Bay, Weather Forecast Office (WFO) offered background on the NWS's new forecast database and a look at how the NWS trains employees using a weather event simulator.

Nine broadcast meteorologists representing six TV stations, and two university professors and four meteorology/environmental science students representing UW-Green Bay and UW-Fox Valley, attended the three-hour seminar. The seminar was organized by Warning Coordination Meteorologist Jeff Last, and Science and Training Meteorologist Gene Brusky.

Guests were welcomed by Meteorologist-In-Charge Gary Austin. Last began the meeting with a light-hearted "meet the WFO staff" photo presentation, which gave the visitors a chance to place WFO Green Bay staff faces with a name. Last also reviewed the 2002 severe weather season. A presentation on the National Digital Forecast Database (NDFD) followed. The presentation generated a lively discussion on how the NDFD is changing the way weather forecasts are made and received.

Brusky put the group through a real severe weather event using the Weather Event Simulator. The visitors got a feel for severe weather operations in the NWS by playing the role of the warning decision maker during the May 6, 2002, severe storms and tornadoes. Brusky began the simulation with a weather briefing, then the simulation began in earnest as storms began developing on radar, and the group had to decide when to issue warnings.

Gene Brusky, at head of table in white shirt, gives a "map briefing" to participants at the spring seminar.

"The 'real-time' simulation was very well received by everyone," said Last. "Some commented that they gained a greater appreciation for the level of skill required to make critical warning decisions."

Active Fire Weather Season Across Central Wisconsin

The relatively dry winter and early spring led to over a dozen forest fires across the state in March and April. One of the largest burned 570 acres of land around Crystal Lake, near the Waushara-Marquette county line. Dry and windy weather conditions, combined with highly flammable vegetation, resulted in explosive conditions when the wildfire began early on April 14.

The Department of Natural Resources reported some structural losses due to the fire. One cottage, three outbuildings, three camper-trailers, and various boats, canoes, and other equipment were destroyed. No permanent residences were lost and no significant injuries occurred.

The Crystal Lake fire. Photo by Chris Klahn.

Weather in Review

Winter 2002-2003: Cold and Dry

By Roy Eckberg, Forecaster,
NWS Green Bay

After a record breaking snowfall in October 2002 across central and north central Wisconsin, little snow fell during the month of November. This trend continued through December. For December, temperatures were well above normal at Green Bay (+5.1 F), Wausau (+5.0 F), and Rhinelander (+4.7 F). Precipitation was scarce during the month, with most locations reporting less than an inch of precipitation. Snowfall amounts for December included only 1.9 inches at Rhinelander, 2.5 inches at Wausau, and 3.3 inches at Green Bay. Even though the first sub-zero temperature of the season returned to Rhinelander on the first of the month, only four additional days in December saw below zero readings. At Green Bay and Wausau, temperatures stayed above zero during the entire month.

Although the mild and dry trend continued through the first half of January, the weather abruptly changed to a much colder pattern. The first sub-zero temperatures of the season were recorded at Wausau (-3 F on the 14th) and Green Bay (-4 on the 21st). For the month, temperatures averaged 0.5 to 1.0 F below normal at Rhinelander and Wausau, and 0.7 F above normal at Green Bay. Snowfall continued to run below normal with Green Bay recording 9.6 inches, Rhinelander 6.1 inches, and Wausau 5.7 inches. Most of the snow at Green Bay in January fell on the last two days of the month (6.4 inches).

February went down in the record books as the coldest month of last winter. Green Bay was a chilly 6.5 degrees below normal, and Wausau and Rhinelander were 7.2 degrees below normal. Snowfall totals for February included 11.5 inches at Wausau, 10.7 inches at Rhinelander, and 9.2 inches at Green Bay. The coldest temperatures of the winter season occurred on February 7, with Rhinelander dropping to –25 F, Wausau to –17 F, and Green Bay down to -13 F. The town of Harrison in Lincoln county recorded a frigid -32 F.

For the entire winter, temperatures were near normal over east-central Wisconsin, and about one degree below normal over central and north-central Wisconsin. Snowfall was substantially below normal over much of the region.

On the Web

www.crh.noaa.gov/grb/climate

Weather in Review

Cold Winter Followed by Chilly and Wet Spring

Even though the calendar said it was March, the first ten days of the month were brutally cold. Under a heavy snow pack on the morning of the 6th, low temperatures plummeted to -25 F at Presque Isle, -24 F at Florence, and -20 F at Land O' Lakes and Rhinelander. Highs on the 7th were more typical of January than March, with readings only reaching the single digits and teens.

April was also dominated by a very cold stretch at the beginning, with highs in the 20s and 30s from April 2-7. The weather turned quickly to summer-like readings. Highs on the 14th reached 83 F at Rhinelander and 84 F at Wausau, while Green Bay topped out at 82 F on the 15th. A strong cold front pushed across the area on the 15th. As the front moved through, many locations saw temperatures drop 20 to 30 degrees in one hour! Ahead of the front over central Wisconsin, severe thunderstorms erupted during the late afternoon. The storms produced large hail from Portage county east into Shawano and Outagamie counties. The hail reached tennis ball size hail near Navarino (Shawano county).

May was cooler than normal over the entire region. Rainfall was above normal over central and east central Wisconsin, while northern Wisconsin was drier than normal.

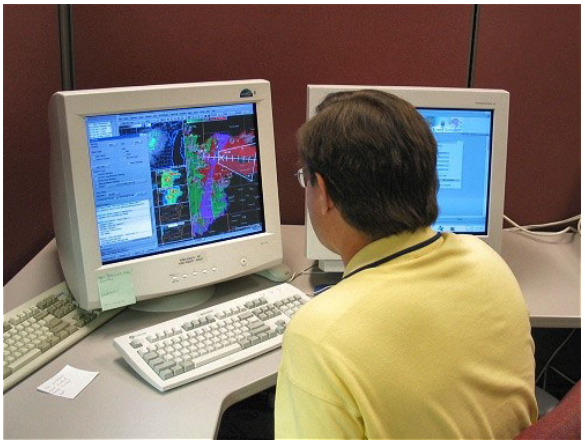
Maintaining the Edge on Severe Weather

By Gene Brusky, Science and Training Meteorologist, NWS Green Bay

In the early Spring of 2002, an exciting new training tool was introduced to National Weather Service Green Bay forecasters with the primary purpose of maintaining and enhancing warning decision making skills during severe weather. This training system, referred to as the Warning Event Simulator (WES), is probably one of the most important training tools ever to be introduced to NWS operational forecasters.

The WES is a LINUX desktop computer workstation that plays back a plethora of archived weather data in displaced real-time (DRT) mode, allowing forecasters to work through significant weather events as if they were working them for the first time. The WES is not unlike an aircraft flight training simulator in that it is utilized to evaluating the trainee's (forecaster's) ability to quickly identify, assess, and mitigate problems involving rapidly evolving situations (e.g., a benign area of thunderstorms suddenly exploding into a line of tornadic supercell thunderstorms heading toward a highly populated metro area). The WES can be utilized in a myriad of ways to assess and hone a forecaster's warning decision-making skills. For example, it can be utilized to assess proficiency using warning product generation software to prepare timely, accurate, and informative warnings and statements; assess effective utilization of established radar storm interrogation procedures to assess 3D storm structure and determine severe weather potential (e.g., hail, damaging winds, tornadoes, etc.); assess the ability to recognize and efficiently evaluate environments conducive to severe storm development; and can be used to simply introduce forecasters to the latest radar data interrogation tools, strategies, and methodologies.

A typical warning event simulation exercise consists of three parts. First, the trainee is asked to review a variety of weather data (including model forecast output, satellite imagery, radar data, surface and upper observations) and then provide a short briefing addressing the severe weather potential later in the simulated "day." After the briefing, the warning simulation software is started and the trainee interrogates radar data (and other environmental data) to assess the severe weather potential of any storms appearing on the display. The radar data (and other environmental data) are automatically updated and made available to the forecaster every five minutes, as if it were being ingested in real-time. Spotter information (e.g., reports of hail, wind damage, funnel clouds, etc.) is also made available to the trainee during the course of the simulation to make it as realistic as possible. Based on all available information, the trainee then makes appropriate warning decisions, and issues warnings and follow-up statements as necessary. At the conclusion of the simulation, a post simulation briefing is conducted that might include a discussion of the event verification (what actually happened), trainee performance with respect to their reasoning behind their warning decisions, overall situational awareness, utilization of radar interrogation procedures and methodologies, and time/task management issues.



Forecaster Tasos Kallas at the Warning Event Simulator.

The typically long winters experienced at northern U.S. NWS offices, such as at the Green Bay Weather Forecast Office, means going several consecutive months without seeing any thunderstorm activity. Forecasters at NWS Green Bay were unanimous that the WES convective simulations have proven to be extremely beneficial in helping them maintain their proficiency and stay sharp whenever severe weather suddenly erupts in northeast Wisconsin.

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2003 Marks 5th Anniversary of Door County Twister

During the afternoon of August 23, 1998, a large tornado formed on the waters of Green Bay, and moved on shore three miles southwest of Egg Harbor. The multiple-vortex tornado was on the ground for nearly 14 minutes and carved a path of damage 5.1 miles long, and one-quarter to one-half mile wide at times. Damage was estimated at nearly $7 million.

Thousands of trees were snapped or uprooted as the tornado moved across the heavily wooded area on Door county's west shore in Murphy Park at 6:30 pm. The width of the damage path just after it came on shore was nearly one-half mile! The tornado then crossed Highway 42 around 6:34 pm, severely damaging several houses and businesses. The twister reached F3 intensity before weakening and lifting off the ground three miles west-northwest of Jacksonport at 6:44 pm. Thanks to advance warning, only two people suffered minor injuries.

The Door county tornado. Photo by Mel Pfister.

The Door county tornado remains the strongest tornado recorded in northeast Wisconsin since the installation of the National Weather Service Doppler radar in Green Bay (late 1994). For more information on the tornado, visit the Door County Tornado website at:

www.crh.noaa.gov/grb/Door.html